

INITIATIVE:

RESEARCH, DEVELOPMENT, IMPLEMENTATION AND TRAINING IN A NEW METHODOLOGY TO CONSERVE AND RESTORE DECORATED HERITAGE BUILDINGS, USING THEIR ORIGINAL DESIGN TECHNIQUE, NOTABLY THE PREVIOUSLY LOST TECHNIQUE OF 'FRESCO PAINTING' AND 'COLOURED PLASTER'

APPLICATION FOR THE SCIENCE AND TECHNOLOGY AWARD OF HUSTA

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East side detail of the Front Screen after first removing of bio growth



After conservation and restoration

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SUMMARY

The conservation and restoration process of two UNESCO world heritage buildings in Hue has led to the successful development and application of new techniques for their sustainable preservation. Notably, the FRESCO technique is one of the oldest methods used by mankind to execute mural paintings and paint architectural surfaces, and its use was widespread in Vietnam in the past. As traditional lime plaster (the requirement for Fresco painting) was gradually replaced by cement plaster, the technique disappeared and is unknown today. Given its excellent properties regarding resistance to climate, microbiological infestation and pollution, plus its unique ability to retain the colour and painted design of architectural surfaces in outside settings, the use of these techniques in the restoration of heritage buildings is extremely effective and desirable.

The New Aspect

To the knowledge of the author, the FRESCO technique has not previously been used in Vietnam or anywhere else for restoration purposes, since it is widely considered to be technically infeasible. Instead, “Secco” techniques with various modern binding agents are generally applied.

The authentic restoration of uncoloured and coloured lime plaster using the same techniques and materials as the original is unique in Vietnam. Instead, cement-based plasters are used, both for new and restoration work.

The restored gate and Binh Phong of the Phung Tien temple in the Imperial City of Hue is now the first example where the adaption and application of the FRESCO technique together with various lime plasters has been successfully applied to a heritage building's restoration.

Creativity

The method's development involved a long process of research, building on the good but improvable results of previous projects, experimentation, testing and application. The process began 8 years ago with the first restoration of a heritage building at the Hue UNESCO site 'Tu Duc tomb'. Prior monitoring showed that in Hue's climate conditions, traditional organic additives and anorganic and organic binders of paint accelerate the deterioration of plaster and paintings, so these materials were gradually reduced. Finally, a restoration method using various lime plasters without organic additives, painting on restoration plasters without any binder (= Fresco technique) and silica-based binder for painting reintegration were developed and successfully applied.

Effectiveness

The methodology developed has significant social, economic and technical benefits for Vietnam. Social, because the *authentic* preservation of heritage buildings for future generations is now possible. By using the same techniques and materials as those used originally, the same technologies are saved and transmitted. If the original substance deteri-

orates at some point, the restored parts exist as evidence of the original ones, so the historical information of the heritage buildings is preserved.

It offers *economic effectiveness* as the materials needed are widely available in Vietnam, not expensive and thus reduce state budgets, while providing excellent results in terms of heritage conservation and restoration.

The *technological effectiveness* has not been fully proven as the first application of the method has only recently been completed. However, we are convinced that the technique will prove both successful and sustainable.

In order to achieve *educational effectiveness*, local heritage authority staff, craftsmen and artisans have been trained in the conservation and restoration of heritage buildings, particularly in how to apply the new method for future projects in this field.

Applicability

The method is broadly applicable as the main equipment and materials are easily available in Vietnam. Just a very small quantity of materials need to be imported via a distributor in Hong Kong. This is the result of a clear focus to 'localize the materials for later use'. A manual with instructions and recipes has also been produced and given to the people who have been trained in this technique.

The applicants of the HUSTA Award are ready to teach and train more people in Vietnam to spread the new method in order to achieve optimal results in preserving the country's unique and invaluable cultural heritage.



South side of the Front Screen after conservation-restoration



North side of the Front Screen after conservation-restoration (basin still under reconstruction)



The roof of the Portal after conservation-restoration



North side of the Portal after conservation-restoration